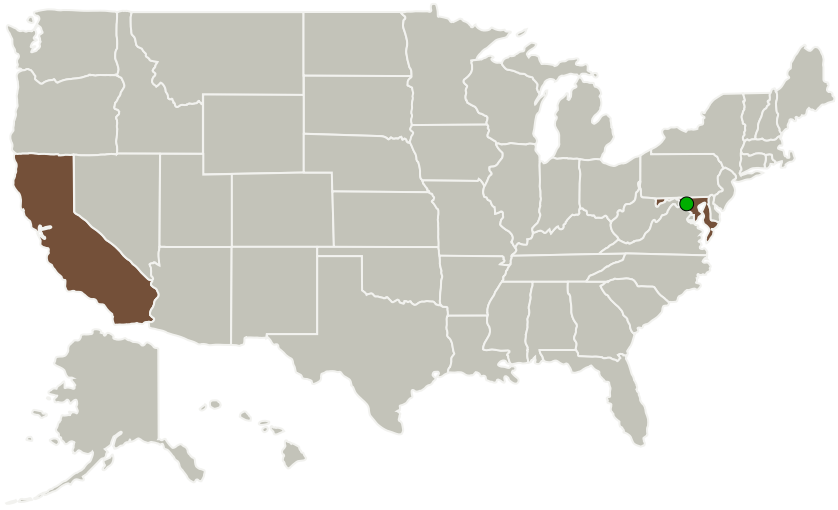
Millisecond X-ray Star Tracker, Phase I

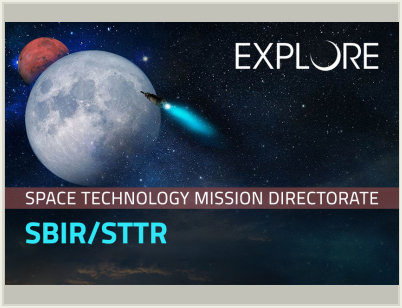
Completed Technology Project (2012 - 2012)

Project Introduction

CrossTrac Engineering, in cooperation with its subcontractors Dr. Suneel Sheikh of ASTER Labs, Inc, and Mr. Paul Graven of Cateni, Inc., proposes to develop a next generation star tracker capable of measuring the attitude of a spacecraft with mill-arcsecond accuracy. This unprecedented improvement in star tracker accuracy is achieved by tracking a single, bright guide star in the deep ultraviolet to soft x-ray bands (1 eV to 10 keV) using a differential measurement of guide star offset angle. The overall field-of-view of the Milli-arcsecond X-ray Star Tracker (MXST) will be limited to a fraction of a degree square with the highest accuracies achieved when the guide star is aligned with the star tracker boresight. This allows a simple, differential measurement to be made of the guide star location relative to the spacecraft coordinate system. By observing guide stars at high energy (short wavelength), the compact star tracker can achieve diffraction limited performance of one milli-arcsecond in a small, compact package.

Primary U.S. Work Locations and Key Partners





Millisecond X-ray Star Tracker, Phase I

Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

Millisecond X-ray Star Tracker, Phase I

Completed Technology Project (2012 - 2012)

Organizations Performing Work	Role	Type	Location
CrossTrac Engineering, Inc.	Lead Organization	Industry	Mountain View, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138305)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

CrossTrac Engineering, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

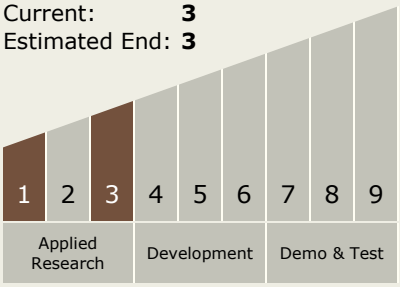
Carlos Torrez

Principal Investigator:

John Hanson

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Millisecond X-ray Star Tracker, Phase I

Completed Technology Project (2012 - 2012)

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.4 Attitude Estimation Technologies
    - TX17.4.3 Attitude Estimation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System